UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,498	01/12/2004	Kazuya Oda	0378-0404P	8273

2292 7590 09/22/2006

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
QUIETT, CARRAMAH J	

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/754,498	KAZUYA ODA	
	Examiner	Art Unit	
	Carramah J. Quiett	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment(s), filed on 07/06/2006, have been entered and made of record. Claims 1-16 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. **Claims 1-4, 8-11, and 15-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (U.S.#6,750,437) in view of Loose (U.S.#6,759,641), Nakano et al. (U.S.#6,094,220), and Suzuki et al. (U.S. Pat. #4,710,803).

As for **claim 1**, Yamashita teaches a method of controlling a solid-state image pickup apparatus (first embodiment, figs. 2-3 and 7), comprising:

a preparing step of preparing a solid-state image pickup apparatus configured to process and output an image signal output from a solid-state image sensor that converts an optical image representative of a field and focused on said solid-state image sensor by a lens to the image signal (col. 7, lines 4-6 and 49 – col. 8, line 11), said solid-state image sensor including a plurality of composite pixels (fig. 2, refs. 309) which are arranged in a photosensitive array and each of which includes two photosensitive cells, a plurality of microlenses (fig. 3) respectively positioned in said plurality of composite pixels focusing incident light (col. 3, lines 51-58), and

only a single color component filter segment positioned in each of said plurality composite pixels (col. 3, lines 51-58), a plurality of color component filter segments being provided in a preselected (indicating) color component filter pattern (col. 4, lines 4-6);

a photometry step of executing photometry with the field (col. 7, lines 49-52);

a signal processing step of processing the image signal and (col. 8, lines 2-11);

a control step of switching signal processing of said signal processing step in accordance with a result of photometry executed said photometry step (col. 7, line 49 – col. 8, line 11);

Yamashita does not expressly disclose a plurality of composite pixels which are arranged in a photosensitive array and each of which includes of a main photosensitive cell, having a first area, and an auxiliary photosensitive cell, having a second area smaller than the first area, different in sensitivity from each other and respectively formed by main photosensitive portion and an auxiliary photosensitive portion, wherein, in the signal processing step, color difference gain processing for the image signal being switched in accordance with control of said control step to thereby lower a chroma of the image signal.

In a similar field of endeavor, Loose discloses a solid-state image sensor including a plurality of composite pixels (fig. 2a) which are arranged in a photosensitive array and each of which includes of a main photosensitive cell (PD1) and an auxiliary photosensitive cell (PD1/PD2) different in sensitivity from each other and respectively formed by main photosensitive portion and an auxiliary photosensitive portion (col. 3, lines 24-57; col. 4, lines 3-16). In light of the teaching of Loose, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Yamashita to have a solid-state image sensor with a main photosensitive cell and an auxiliary photosensitive cell with different in sensitivities from

each other in order to provide a sensor with an option for changing the resolution setting (col. 4, lines 3-16).

In a similar field of endeavor, Nakano et al. has a solid-state image pickup apparatus called an image pickup unit comprising a solid-state image sensor called an image pickup element (fig. 1, ref. 11), which converts light having passed a lens block into an electrical signal (col. 2, lines 19-23). Nakano's lens block performs automatic focus control, automatic iris control, and zoom control on the image signal (col. 2, lines 18-23), where the signal from the image sensor executes photometry (fig. 1, col. 2, lines 12-17). In addition, Nakano discloses a signal processor (fig. 1, ref. 11) and an image extraction unit (fig. 1, ref. 14) for processing the image signal and a controller (fig. 1, ref. 13) for switching signal processing the signal processor in accordance with components of the lens block and with a result of photometry (col. 2, lines 22-35). Lastly, in the image extraction unit, the image signal undergoes color difference gain processing (col. 2, lines 35-40) wherein the image signal is switched in accordance with a microcomputer (fig. 1, ref. 131) of the controller, which will lower a chroma of the image signal (col. 4, lines 22-30). In light of the teachings of Nakano, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Nakano's method of signal processing with Yamashita's solid-state image sensor in order to extract an object on the standardized color difference plane with high accuracy due to a change of distribution of the object on the standardized color difference plane (Nakano, col. 1, lines 29-33).

In a similar field of endeavor, Suzuki discloses a solid-state image sensor (fig. 3, ref. 10) including a plurality of composite pixels (figs. 3 and 4, ref. 10a) which are arranged in a photosensitive array and each of which includes a main photosensitive cell (fig. 4, refs. 28, 34,

and 35), inherently having a first area, and an auxiliary photosensitive cell (fig. 4, ref. 29), inherently having a second area smaller than the first area (col. 3, lines 35-67). In light of the teachings of Suzuki, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a main photosensitive cell, having a first area, and an auxiliary photosensitive cell, having a second area smaller than the first area in the method of Yamashita. This modification improves the signal to noise ratio of the image signal as well as the dynamic range (Suzuki, col. 1, lines 30-34).

For **claim 2**, Yamashita, as modified by Loose, Nakano, and Suzuki, teaches a method wherein a control step variably controls the signal processing for the image signal in accordance with a focal distance of the lens. Please read Yamashita, col. 7, line 49 – col. 8, line 11; and Nakano, col. 2, lines 12-23.

For **claim 3**, Yamashita, as modified by Loose, Nakano, and Suzuki, teaches a method wherein a control step variably controls the signal processing for the image signal in accordance with a zoom position of the lens (Nakano, col. 2, lines 18-23).

For **claim 4**, Yamashita, as modified by Loose, Nakano, and Suzuki, discloses a signal processing step (Yamashita, col. 7, line 49 – col. 8, line 11). However, Yamashita nor Loose and Suzuki do not explicitly teach a method wherein said signal-processing step that further includes tonality correction processing for the image signal switched in accordance with the control of the control step. In a similar field of endeavor, Nakano's image pick up apparatus has a signal processor (fig. 1, ref. 11) and an image extraction unit (fig. 1, ref. 14) for processing the image signal wherein the image extraction unit allows a condition to set under the desired hue and degree of color saturation (col. 4, lines 14-21). In light of the teaching of Nakano, it would have

been obvious to one of ordinary skill in the art at the time the invention was made to include the processing step of Nakano with Yamashita's image processing step, such as tonality correction. The tonality correction provides an additional improvement for quality of the color image by controlling the white balance (Nakano, col. 1, lines 48-52).

Claims 8-11 are apparatus claim corresponding to the method claims 1-4. Therefore, claims 8-11 are analyzed and rejected as previously discussed with respect to claims 1-4.

For **claim 15**, Yamashita, as modified by Loose, Nakano, and Suzuki, teaches a method, wherein the main photosensitive cell has an L-shaped region provided obliquely with regard to a horizontal direction, and the auxiliary photosensitive cell is provided in a space defined by the L-shaped region (Suzuki; figs. 3 and 4; col. 3, lines 35-67).

Claim 16 is an apparatus claim corresponding to the method claim 15. Therefore, claim 16 is analyzed and rejected as previously discussed with respect to claim 15.

5. **Claims 5 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (U.S.#6,750,437) in view of Loose (U.S.#6,759,641), Nakano et al. (U.S.#6,094,220), and Suzuki et al. (U.S. Pat. #4,710,803) as applied to claims 4 and 11, respectively above, and further in view of Nakata et al. (U.S.#6,747,696).

For **claim 5**, Yamashita, as modified by Loose, Nakano, and Suzuki discloses a signal-processing step (Yamashita, col. 7, line 49 – col. 8, line 11). Nakano has a signal processor that is switched in accordance with the controller (fig. 1; col. 2, lines 22-35). However, Yamashita nor Loose, Nakano, and Suzuki do not explicitly teach a method wherein in said signal-

processing step a gamma table to use is switched in accordance with the control of the control step.

In a similar field of endeavor, Nakata has a solid-state image apparatus that is configured to process image signals. This includes a gamma correction table (fig. 7 or fig. 8) switched by a control signal (col. 13, lines 29-43 or col. 14, lines 6-26). In light of the teachings of Nakata, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Yamashita to include a signal-processing step with a gamma table switched by a controller. This modification provides a means for carrying out a correcting processing for canceling noise component from image data without deteriorating image quality so as to obtain excellent image data (Nakata, col. 1, lines 66-67 and col. 2, lines 1-3).

Claim 12 is an apparatus claim corresponding to the method claim 5. Therefore, claim 12 is analyzed and rejected as previously discussed with respect to claim 5.

6. **Claims 6-7 and 13-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (U.S.#6,750,437) in view of Loose (U.S.#6,759,641), Nakano et al. (U.S.#6,094,220) and Suzuki et al. (U.S. Pat. #4,710,803) as applied to claims 1 and 8, respectively above, and further in view of Ng et al. (U.S.#5,699,102).

For **claim 6**, Yamashita, as modified by Loose, Nakano, and Suzuki teaches a method wherein photometry (Yamashita, col. 7, line 49 – col. 8, line 11). However, Yamashita nor Loose, Nakano, and Suzuki do not explicitly teach a method wherein said control step determines shading on the basis of the result of photometry and switches the processing of said signal processing step in accordance with a result of determination. In figure 1 and 2, Ng has an

imaging device with a controller that compensates the shading on the basis of the photometry result along with a gain/filter corrector (col. 2, lines 47-49; col. 3, lines 1-11). In light of the teaching of Ng, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Yamashita to include the control step of Ng in order to standardize the image signals and thus improve the quality of the image (col. 2, lines 61-67).

For **claim 7**, Yamashita, as modified by Loose, Nakano, and Suzuki teaches a method wherein photometry (Yamashita, col. 7, line 49 – col. 8, line 11). However, Yamashita nor Loose, Nakano, and Suzuki do not explicitly teach a method wherein said photometry step that executes divisional photometry with the field on the basis of the image signal output from the image sensor, and wherein said control step determines shading on the basis of a result of said divisional photometry. As shown in figure 2 of Ng, one can see that Ng's imaging device satisfies the limitations of claim 7(col. 2, lines 61-67). In light of the teaching of Ng, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Yamashita to include the photometry step of Ng in order to standardize the image signals and thus improve the quality of the image.

Claims 13-14 are apparatus claim corresponding to the method claims 6-7. Therefore, claims 13-14 are analyzed and rejected as previously discussed with respect to claims 6-7.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fan et al. (U.S. Pat. #4,710,803) A CMOS with L shaped photodetector areas.

Watanabe (U.S. Pat. #5,703,641)	Solid-state color image pickup device with L-shaped (1:3 filter ratio and 3:1 filter ratio) areas.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carramah J. Quiett whose telephone number is (571) 272-7316. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NgocYen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CJQ
September 15, 2006

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER